Index No …….

1) **(50 Marks)**

(a) Distinguish between User Experience (UX) Design and Human-Computer Interaction (HCI) with reference to their goals and primary focus areas

[10 Marks]

ANSWER IN THIS BOX

UX Design focuses on the overall experience users have when interacting with a product or service, including emotional responses, ease of use, and satisfaction.

HCI is a broader academic discipline that studies how humans interact with computers, including the design, implementation, and evaluation of interactive systems.

While HCI is rooted in research and analysis (often theoretical), UX Design is more practitioner-oriented, focusing on applying insights to improve product usability and desirability.

UX Design includes elements like branding, usability, and functionality as part of a seamless experience, whereas HCI traditionally focused more on usability and interaction models.

(b)

The Double Diamond model is widely used to structure the design process in user experience and interaction design.

(I) Describe the **four (4) key stages** of the Double Diamond model, and explain how each stage contributes to effective user-centered design.
(II) Using an example, explain how a design team might apply this model in developing a mobile app for public transportation users.

[12 Marks]

Answer in the box

(I) The Four Stages of the Double Diamond Model:

1. **Discover**
   - This stage involves exploring the problem space by gathering insights from users, stakeholders, and contextual observations.
   - Goal: Understand real user needs, challenges, and expectations.
2. **Define**
   - Here, the gathered insights are synthesized to clearly define the problem(s) that need to be solved.
   - Goal: Establish a clear design challenge and scope.
3. **Develop**
   - In this stage, designers brainstorm, ideate, and prototype multiple potential solutions.

- Goal: Explore alternative solutions and create early prototypes for feedback.

4. **Deliver**
   - This stage includes testing, refining, and finalizing the design for implementation.
   - Goal: Validate and finalize a design that effectively solves the defined problem.

(II) Application Example – Transport App:

A UX team designing a public transport app might:

- **Discover**: Conduct interviews and field studies with commuters to understand pain points (e.g., delays, lack of real-time info).
- **Define**: Synthesize data to define a core problem such as "commuters lack timely updates on bus arrivals."
- **Develop**: Generate ideas like push notifications, map-based tracking, and digital timetables; build and test paper prototypes.
- **Deliver**: Finalize the app with real-time GPS integration and test usability with commuters before launch

(c) Users often interact with digital products based on mental models they form about how the system works.

(I) Define a *mental model* and explain how it differs from a *conceptual model* in the context of user experience design.
(II) Describe **one (1)** design strategy that helps align a user's mental model with the intended system behavior. Provide an example to support your answer.

[20 Marks]

Answer in the box

(I) Definition and Comparison (8 Marks):

- A mental model is a user's internal understanding or assumption of how a system works based on prior experience, intuition, or observation.
- A conceptual model is the actual design logic and structure presented by the interface, developed by the designer.
- **Key difference:** The mental model is in the user's mind, while the conceptual model is deliberately built by the designer and made visible through the interface.

(II) Design Strategies to Align Mental and Conceptual Models (12 Marks):

Note: Although two strategies are presented below, students are required to provide only one in their answer.

1. Use of Familiar Metaphors and Terminology

- Designers can use metaphors that users already understand, such as the “shopping cart” in e-commerce.
- This helps users predict what will happen when they interact with a feature, even if they’ve never used the system before.

2. Progressive Disclosure and Intuitive Feedback
   - Provide clear guidance, tooltips, and feedback during user interaction.
   - Example: When hovering over a button, a tooltip appears to explain its function, helping users build a correct mental model over time.

(d) Briefly state the key components of a WIMP interface. Sketch a simple WIMP interface for a wizard-based software installer. Clearly label **at least four (4)** standard WIMP elements.

[08 Marks]

Answer in the box

Windows, Icon, Menu , Pointer

• A **window** titled "Software Installation Wizard", • **Icons** for "Back", "Next", and "Cancel", • A **menu bar** for "Help", • A **pointer** (mouse cursor) selecting a check-box like “Install for all users”

2)

(50 Marks)

(a) **Read the following user description carefully and answer the questions below:**

"*An online learning platform is being developed for a mixed group of adult learners. Sarah is a 42-year-old high school teacher who is pursuing a diploma in educational technology. She studies mostly in the evenings after school and prefers watching recorded videos over reading long texts. She has a slow internet connection at home.*
Jamal is a 23-year-old undergraduate student studying from a rural town. He uses his mobile phone for most tasks and has very limited data. He is visually impaired and uses screen readers to interact with content."

I. Complete **Table I** by identifying and describing the two personas. Include each persona's **background**, **goals**, **challenges**, and **design considerations** based on the description above. The first row and column headings have been provided for you.

II. Complete **Table II** by writing a **short usage scenario (2–3 sentences)** for each persona. Describe how that persona would use the platform in their **daily learning context**.

[25 Marks]

ANSWER IN THIS BOX

(I) Table I

Persona Name / Persona Attribute	Sarah	Jamal
Background	42-year-old high school teacher; pursuing a diploma in educational technology	23-year-old undergraduate from a rural town; visually impaired
Goals	Learn at her own pace during evenings	Access course material on mobile; complete coursework efficiently
Challenges	Slow internet; prefers video over text	Limited data; uses screen readers
Design Considerations	Provide downloadable video content; minimize heavy text; enable offline access	Ensure screen-reader compatibility; mobile-friendly layout; low-bandwidth design

(II) Table II

Persona Name	Short Scenario
Sarah	After school, Sarah logs into the platform on her laptop, downloads the evening's lesson video, and watches it offline while taking handwritten notes.
Jamal	Jamal uses his phone and screen reader to access the course at home. He listens to the audio lecture while scrolling through accessible notes using voice navigation.

(b) Consider the scenario below:

1. A man walks into a bank to withdraw money.
2. He appears confused.
3. A nearby security guard points to a self-service kiosk.
4. The man slowly walks over and sees a button labeled "Start."
5. He hesitates, then presses it.
6. The screen displays three options: "Deposit," "Withdrawal," and "Account Opening."
7. Although his English is weak, he selects "Withdrawal."
8. A printed token labeled **W034** appears.
9. He observes people sitting and a display board showing **W032 – Counter 5**.
10. He sits but does not continue to watch the board.
11. Later, he suddenly notices his number (**W034 – Counter 7**) has appeared.
12. He hurries to the counter, looking nervous.

I. Using the scenario above, carry out an interaction analysis to identify **two (2) examples** each of **"Verbal behavior"**, **"Non-verbal behavior"** and **"Interaction with artifacts"**. Complete **Table I** below by indicating the relevant sentence number(s) and briefly explaining what the behavior reflects.

II. As a UX designer, evaluate the user experience described in the scenario. Identify **four (4) key observations** where the user encounters confusion, inefficiency, or uncertainty and complete **Table II** below.

[25 Marks]

ANSWER IN THIS BOX

(I) Table I

Type of Interaction	Sentence Number(s)	Explanation of the Behavior
Verbal Behavior 1	3	The security guard gives verbal (or implied verbal) guidance by pointing to the kiosk, indicating an instruction.
Verbal Behavior 2	7	The man selects "Withdrawal" despite weak English, reflecting internal verbal reasoning or decision-making.
Non-verbal Behavior 1	2	The man “appears confused,” showing hesitation and uncertainty through body language (e.g., facial expressions, posture).
Non-verbal Behavior 2	12	He "hurries" to the counter, "looking nervous," physically indicating stress, urgency, and anxiety.
Interaction with Artifact 1	5	The man presses the **“Start”** button on the kiosk — initiating interaction with the self-service interface.
Interaction with Artifact 2	9	He observes the **display board**, engaging with a visual interface while waiting.

(II) Table II

Observation (What happened?)	UX Issue (Why it is a problem?)	Recommendation (How to improve it)
1. The user looks confused on entry.	No clear guidance for first-time visitors.	Add **clear signage** with steps, icons, and language options near the entrance.
2. The user hesitates at the kiosk.	Interface lacks clear guidance and does not build user confidence.	Add a **welcome screen** with brief instructions or audio prompts to explain next steps.
3. Language barrier at menu.	English-only interface causes comprehension difficulty.	Add **multilingual options** (Sinhala, Tamil, English) and use **icon-based choices**.
4. Missed token call on the board.	User did not notice the visual-only notification due to distraction..	Use **audio-visual alerts** (sound cues + flashing lights) for visibility

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